REMARKS ON THE CONNECTION BETWEEN HEPATIC AND RENAL DISEASE: Being the Substance of a Demonstration given at the Edinburgh New Town Dispensary. By G. A. Gibson, M.D., D.Sc., F.R.C.P.E., F.R.S.E., *Physician to the Dispensary.*

We are in the habit of seeing at this, as at all similar institutions, a large number of patients exhibiting the symptoms of what you are no doubt tempted to regard as very commonplace diseases. Amongst these, cases of impaired digestion are perhaps the most frequent, and it has been my endeavour to point out the different indications which would lead to the detection of the disordered part of the alimentary system. To-day I wish to go a step further, and to bring before your notice some of the consequences resulting from defective action of the digestive apparatus, and you will see that, while every part of the body suffers more or less, certain systems are more especially liable to injury from imperfect assimilation of the food.

In order to have a clearer idea of my object, it will be necessary to tell you as briefly as possible the particulars of a case in illustration.

A lady, aged 56, married, and the mother of several children, consulted me lately, complaining of great depression of spirits, and dreading that she was about to fall a victim to disease of the heart. She had, as a rule, enjoyed good health until about eighteen months before, when she had suffered from an attack of diphtheria. Since that date she had never been quite so strong as formerly, and had been frequently troubled with dyspepsia. About six months before seeing me, she had been alarmed by a severe attack of vertigo, attended by a certain amount of confusion of ideas.

When she consulted me she suffered from a dull persistent headache, more especially in the frontal region; there was a constant feeling of heaviness; a frequent sense of fulness and distension accompanied by great flatulence; usually a bitter taste in the mouth; frequently heartburn; and, as a rule, constipation. Added to these, she experienced considerable palpi-

Cerebral haemorrhage as a
Gibson George Alexander.
Royal College of Physician
[1153] b21698120
Feb 02 2016

REMARKS ON THE CONNECTION BETWEEN HEPATIC AND RENAL DISEASE: Being the Substance of a Demonstration given at the Edinburgh New Town Dispensary. By G. A. Gibson, M.D., D.Sc., F.R.C.P.E., F.R.S.E., *Physician to the Dispensary.*

We are in the habit of seeing at this, as at all similar institutions, a large number of patients exhibiting the symptoms of what you are no doubt tempted to regard as very commonplace diseases. Amongst these, cases of impaired digestion are perhaps the most frequent, and it has been my endeavour to point out the different indications which would lead to the detection of the disordered part of the alimentary system. To-day I wish to go a step further, and to bring before your notice some of the consequences resulting from defective action of the digestive apparatus, and you will see that, while every part of the body suffers more or less, certain systems are more especially liable to injury from imperfect assimilation of the food.

In order to have a clearer idea of my object, it will be necessary to tell you as briefly as possible the particulars of a case in illustration.

A lady, aged 56, married, and the mother of several children, consulted me lately, complaining of great depression of spirits, and dreading that she was about to fall a victim to disease of the heart. She had, as a rule, enjoyed good health until about eighteen months before, when she had suffered from an attack of diphtheria. Since that date she had never been quite so strong as formerly, and had been frequently troubled with dyspepsia. About six months before seeing me, she had been alarmed by a severe attack of vertigo, attended by a certain amount of confusion of ideas.

When she consulted me she suffered from a dull persistent headache, more especially in the frontal region; there was a constant feeling of heaviness; a frequent sense of fulness and distension accompanied by great flatulence; usually a bitter taste in the mouth; frequently heartburn; and, as a rule, constipation. Added to these, she experienced considerable palpitation of the heart, and was often troubled with vertigo, so great as to cause loss of balance, the nervous disturbance even going the length sometimes of mental confusion. No wonder that the result of these symptoms was painful despondency. Yet her appetite was good, and her sleep commonly undisturbed, although she was at times troubled by calls to pass water during the night.

The patient was of sallow complexion, the body was well-nourished, but the muscles were soft and flabby. Her tongue was large and free from fur in front and at the sides; the posterior third, however, was covered by a dense coat of dirty white colour, and the circumvallate papillæ were larger than their natural size. The mucous membrane of the fauces and pharynx was relaxed. The abdomen was distended by flatus; the liver and spleen were of normal size. The pulse was regular, but exhibited the features of high arterial tension. Examination of the heart proved it to be healthy, the only change to be perceived being a slight bluntness of the first sound.

Now, this is a clinical picture of a condition extremely common in our own times, and which may be induced, as Murchison says in his lectures on the "Functional Derangements of the Liver," even by "partaking moderately of one of the fashionable dinners of the age." Believing that her food was in great part responsible for her discomfort, my patient had adopted a dietary of her own, characterised by extreme plainness. For breakfast she ate dry stale bread, sometimes toasted, and drank a cup of milk. In the middle of the day she dined off a steak or chop with dry bread, accompanied by cold water. In the evening she again took stale bread and a cup of milk, and before retiring she was in the habit of having a biscuit and some milk or water. Certainly this was a restricted diet. She had changed her dinner-hour from the evening to the middle of the day; she only partook of animal food once in the twenty-four hours; she avoided all vegetables, as well as puddings and sweets of every kind; and lastly, she never made use of wines or tea. But, in spite of all her care, she still suffered from her troublesome symptoms, and became possessed by the idea that her state of health was precarious.

Now, this patient exhibited the sequence of phenomena which are usually attendant upon imperfect disintegration of the nitrogenous elements of the food. You know that when oxidation of albumen is perfectly carried out, urea is produced by the liver and separated by the kidneys. If, however, there is an excess of albuminous food, or a diminution of the functional activity of the liver, the process of oxidation is not allowed to attain this final result, and the products of disintegration are found in the less highly oxidised form of uric acid or its salts. It is the presence of these matters in the blood that gives rise to so much of the discomfort resulting from inaction of the liver, and more particularly causes the headache, heaviness, palpitation, vertigo, and despondency such as this case showed. In a word, the imperfect disintegration of the nitrogenous elements in the liver leads to an abnormal state of the blood, termed by Murchison "Lithæmia."

To complete the investigation of such a case, it is necessary to examine the urine in order to be certain of the presence of lithuria, and to learn whether the abnormal constituents, if present, be in the form of uric acid or urates. In this case there was another reason for careful examination of the urine. This was the existence of the high-tension pulse, to which reference will again be made. The patient was requested, therefore, to send a specimen of the urine collected during twenty-four hours.

The urine was of a medium sherry colour, corresponding very closely to the third or yellow of Vogel's series of urine tints. The upper layers were quite clear, but the lower third of the vessel was obscured by a slight haze, and a thin layer of sediment covered the bottom. The reaction was strongly acid, and the specific gravity 1025. The application of heat caused the development of small flocculent masses throughout the urine, and these did not disappear on the addition of nitric acid. The cold nitric acid test produced a very distinct cloud at the junction of the two fluids. Albumen was therefore present in considerable quantity.

Microscopic investigation cleared up the whole case. On examining a drop of the lower portion of the urine containing the sediment, the field of the microscope was found to be full of uric acid crystals of almost every known natural shape. Plates of quadrangular, hexagonal, and elliptiform outline, some of the latter being drawn out at one end, so as to resemble a tennis-racket, drums and cubes, stars and spikes were present, along with other more complicated forms, resulting from the union of the simpler crystals. Some crystals of oxalate of lime were noticed, along with squamous cells of vaginal epithelium, and a few granular tube-casts, in a broken condition.

You see that the urine proved the excretion of large quantities of uric acid, and it also showed the presence of oxalate of lime, another product of mal-assimilation of the food. But it did far more than this. It revealed the fact that albumen was being passed in the urine, and the tube-casts pointed to the conclusion that this was no mere accidental occurrence, but that it depended on some structural change in the renal epithelium.

It will now be evident to you why the high-tension pulse made it more imperative to examine the urine. A pulse showing high arterial tension in anyone above middle age raises a suspicion of renal mischief, more especially when associated with the necessity to rise during the night.

The point to be insisted on is the causal relationship existing between faulty digestion and disease of the kidneys. After Bright, Prout is to be regarded as the pioneer leading the advance in this direction. He enunciated very decided views as to the causation of renal disease by imperfect assimilation of food. Johnson has of late acknowledged the same connection between the two morbid conditions; and Murchison, who quotes him in his classic "Lectures," fully endorses this opinion. Other writers might be mentioned, but the clearest statements are those which have come more recently from the pen of Saundby. He lays great stress on the fact that the accumulation of impurities in the blood impedes the capillary circulation, and raises the arterial blood-pressure. The muscular walls of the heart undergo hypertrophy in order to overcome the capillary obstruction. The pressure in the renal glomeruli necessarily rises, as well as that of the systemic circulation generally, and the strain on the renal vessels is greatly increased. Further, the presence of the insufficiently oxidised albumen acts as a stimulant to the secreting cells of the kidney, and so produces diuresis. The result of these different agencies is to keep the kidney in a state of constant strain and irritation, and if the process be not checked, the inevitable result is chronic renal disease. The subsequent progress of this case will show you how the symptoms subside on appropriate treatment.

The patient was ordered a pill composed of blue pill, extract of nux vomica, and extract of hyoscyamus, which was to be taken every night. A claret-glassful of Hunyadi János water, with an equal quantity of warm water, was to be taken every morning before breakfast. In this way it is possible to strike at the root of the malady, by promoting the disintegrating process of the digestive system, and by carrying away the waste from the body with as little delay as may be. But this is not all. You know that while urea is a highly soluble substance, lithic acid requires 15,000 parts of cold water, and 1,800 parts of boiling water for its solution. Hence it is necessary in the lithic acid diathesis to give a free supply of fluid to aid the elimination of the uric acid and its salts, and the aim is more certainly attained if alkalies be administered along with the diluent. By far the best of these is lithia, which has about twice the therapeutic value of either soda or potash. Five grains of the carbonate of lithia were prescribed, to be taken three times a day, in the form of aërated lithia water. The best time for the administration of the diluent and alkali is from two to three hours after meals, and so it was given in this case.

With regard to the diet, it will be evident that very little alteration was needed; this alteration, too, was in the form of a slight return to more generous living. White fish, plainly boiled, was added to breakfast; a small quantity of soup was allowed at dinner; and spinach, of all vegetables available in winter the most easily digested, was recommended to be taken along with the meat; and at tea-time, cocoa was substituted for milk. Besides these modifications, as the patient was feeble, a glass of dry sherry was ordered to accompany dinner, and to the third glass of the aërated lithia water, which was taken about the hour of retiring to rest, a tablespoonful of old whiskey was added.

Four days after the commencement of treatment considerable improvement had been effected in the patient's general condition. The tongue was cleaner, there was less distension of the abdomen, the disagreeable taste had gone, the headache and heaviness had disappeared, no feeling of palpitation or vertigo had been experienced, and the depression of spirits was greatly relieved. No doubt the desponding frame of mind was in part lessened by the favourable prognosis given.

The urine was of a pale straw tint, very faintly acid, and had a specific gravity of 1018. There was a slight haze, but no deposits. The cold test with nitric acid gave a much fainter cloud at the line of junction. Microscopic examination failed to detect any crystals either of uric acid or oxalate of lime, and no tube-casts were present.

On the ninth day from the commencement of treatment the symptoms were still further ameliorated, and the cloud of albumen much less distinct. At this stage the blue pill was replaced by euonymin, in conjunction with the extracts of nux vomica and hyoscyamus. The pill was ordered to be taken every alternate night. As the patient's strength was greater, the sherry at dinner was given up.

By the eighteenth day the most careful analysis did not yield the least vestige of albumen, and no abnormal substances were present in the urine. The pulse had much less tension, and the patient was feeling better than she had done for many months. The whiskey was now stopped, and a tonic containing strychnia, phosphoric acid, compound tincture of cardamoms, and infusion of calumba was prescribed. Since this period the patient has rapidly gained strength and energy.

This may be regarded as a typical case of commencing renal disease depending on lithæmia, and one which, unless checked, would most certainly end in the pathological condition variously known as chronic interstitial nephritis, or cirrhotic, granular, contracting, or gouty kidney. Apart from its interest from the point of view of scientific medicine, it is one which teaches one or two valuable lessons. It shows how much of deep interest there may be in what might seem a very humdrum case. It points to the advantage resulting from the routine examination of the urine in cases of "indigestion," and to the absolute necessity of such investigation whenever the pulse shows any trace of high arterial tension. And, finally, it gives evidence of the rapid disappearance of all signs of commencing structural change in the kidneys, caused by the lithic acid diathesis, when the lithæmia is energetically treated.